

# TM 01 – Project Cost Estimating: Market Trends and Projected Costs

## Clackamas WES Energy Services – Clackamas County, Oregon

PREPARED FOR: Ted Kyle/Clackamas WES  
Terry Gould/B&C and Team  
Wade Hathorn/HDR and Team  
Dale Richwine/MWH and Team

PREPARED BY: Dave Green/CH2M HILL  
Ted Downen/CH2M HILL

REVIEWED BY: Matt Noesen/CH2M HILL  
Rob Edgerton/CH2M HILL  
Pete Bredehoeft/CH2M HILL

DATE: March 8th, 2007

CH2M HILL PROJECT NUMBER: 354993.ES.01.02

### Purpose

This technical memorandum supplements TM 01-Project Cost Estimating Guidelines, to refine the following supplemental components of the estimate and to promote discussion with the client and consulting team members relative to the appropriate market trends, escalation factors, and cost trends that are appropriate for this program. The specific factors addressed in this memorandum are:

- Market trends – Current and local factors that influences the cost of the projects and the adjustments that apply to the cost base.
- Projected costs – Discussion of escalation factors and basis
- Historical costs – Cost database information and indexing methodology.

Processes, forms and templates that are noted, but not yet developed are indicated with (TBD). This will help with the identification of areas that need to be further refined for the estimating process.

### Market Trends – Overall Trends

CH2M HILL tracks market trends throughout the construction industry. Presented herein are some graphs and charts that begin to provide some insight on recent cost trends that might be applicable to this project and wastewater infrastructure projects in general.

## CURRENT MARKET TRENDS – JUNE 2006

**ENR’s Material Price Index has switched back to a decline for April, but is still in an upward trend from a year ago in 2005.**

**Material Prices – Examples:**

- Ready Mix Concrete has increased **+6.9%** from one year ago.
- Paving asphalt has increased **17.8%** from one year ago.
- Copper pipe increased this month by **+3.2%**, and is **44.1%** higher than one year ago.

	ENR CCI Index - 20-City Average	Material Price Index
Overall Average	+2.88%	+1.85%
1995 to 2003 Average	+2.34%	-0.55%
2004 to 2005 Average	+6.43%	+10.50%
2004 to Present Average	+4.48%	+9.04%
Difference 1995 to 2003 versus 2004 to 2005	+4.09%	+11.05%



## MARKET FACTORS

**Some interesting points from a 2006 Public Works Institute presentation on March 1<sup>st</sup>, 2006:**

- **Consumption of Goods in China** – ½ of worlds cement, etc.
- **The Katrina/Rita Effect** – Over \$38 BILLION spent to date
- **Petroleum Products** – Increases in asphalt, PVC products, backorders
- **Fuel and Delivery Costs** – 30% impact on large earth moving projects
- **Natural Gas & Fuel Surcharges** – Manf Raw Mat’s (RMS) + Diesel Fuel (DFS)
- **Healthcare & Pension Contribution** - Increases Anticipated
- **Other Raw Materials** – Glass (+16%), Aluminum (+3.5%), Iron Ore (+20%)
- **Hording of Materials** – Causing Shortages and Pushing up Prices



## Market Trends - Analysis

TM-01 addressed the use of a Market Condition Adjustment to account for, 1) Project Specific Factors and, 2) Local Economic Factors. Market Condition Adjustment factors are separate from the "Location Factors" used to equate costs from other localities to the Portland area.

### Project Specific Factors:

This is to account for components of the project that are not addressed by the direct cost development. As an example, if labor shortages are anticipated and additional per-diem will need to be paid to attract qualified craft, then this is to be accounted for with this factor. Or, if there are considerations such as higher than anticipated fuel costs in the region or potential material shortages, these are addressed by this factor.

Also, if a specific site has restrictions or constraints that are identified or anticipated that could impact the costs of the project; they would be accounted for here.

### Local Economic Factors:

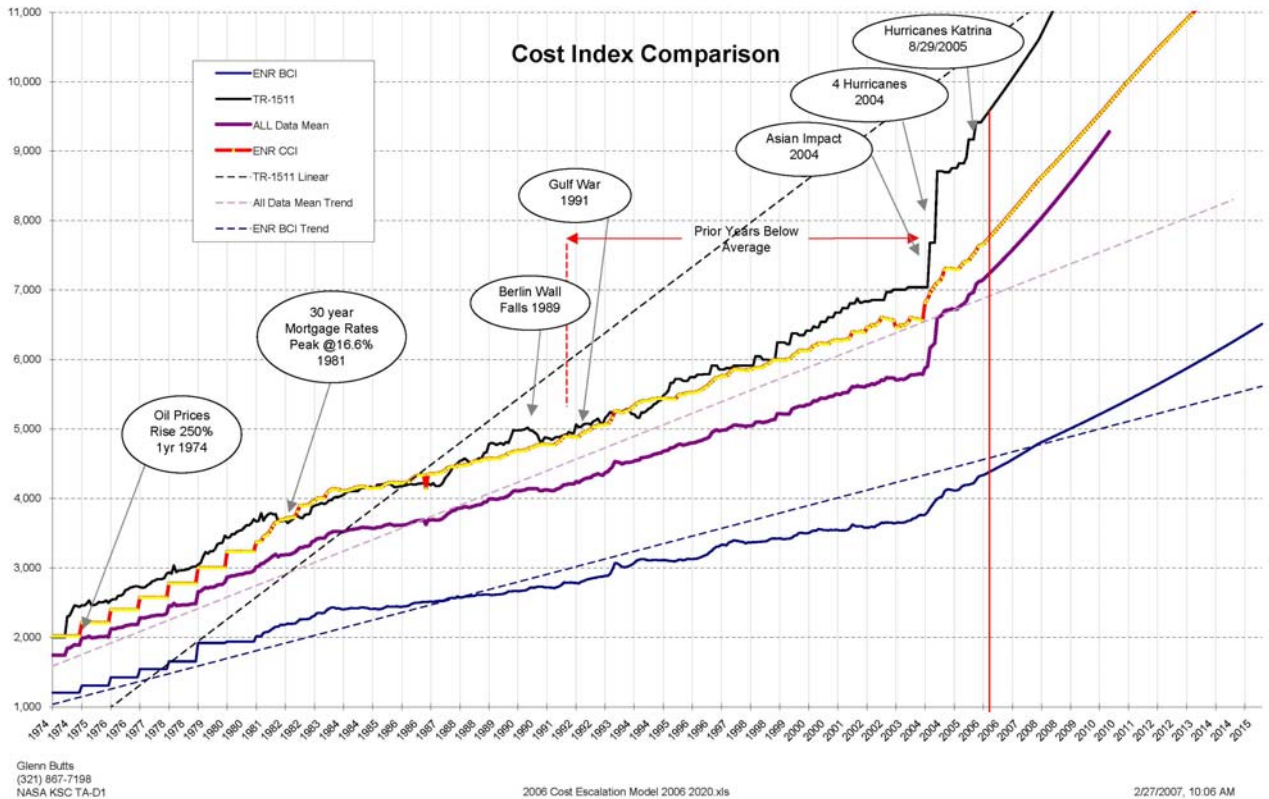
Economic factors can be a component of the escalation factors and it's sometimes difficult to distinguish between the two. However, in this case, this is an analysis of what impact the local economy has on the projects. These are the influences outside of the direct construction and engineering.

This can also include factors for working for a particular client or jurisdiction.

### Market Trends - Weighting:

Once the "Project Specific" and the "Local Economic Factors" are identified, then a weighted factor between the two can be applied. The methodology and rationale for the ultimate factor to be used requires documentation.

At this time, the factor to use is 1.00. This is because no investigation or analysis has been performed to justify an appropriate and applicable value (TBD). Prior to the submittal of the first estimate, this requires review to determine whether or not a factor can be calculated and applied.



## Projected Costs - Escalation

This topic was briefly addressed in TM-01: Project Cost Estimating Guidelines. As noted in that discussion, the projects are to be estimated in “Today’s Dollars”, meaning first quarter, 2007 USD. The ENR 20-city CCI index for the month that the estimate is produced is to be noted on the estimate and in the “Basis of Estimate”. Once this is noted, it documents the time frame of the estimate and provides the basis for future costs adjustments.

This is the final step in the “Adjustment Process” to obtain a completed estimate. The rationale for this adjustment is to give an indication of what the projected costs of the project would be in future dollars. It is felt that this is an appropriate approach so that the client has an indication of the Future Cost of the project and what the impact of time has on the values.

It is assumed that the client does indeed want costs of the projects escalated. However, as input from the client is received, it may be that for their purposes, the costs are to be presented in “Today’s Dollars”. The final approach to cost escalation will be documented as part of the final tech memo and the cost estimates themselves. (TBD)

There are three important issues that apply to escalation: 1) what rate to use, 2) the mechanics of allocating the escalation to the time frame under consideration, and 3) at what period of time will the construction work to be performed.

### Escalation Rate

To determine an appropriate escalation rate is always a complex assessment. The ENR indexes can be used to indicate a trend, but these are always historical in nature. Using ENR’s CCI 20-city index, the rate of change from a year ago is +2.5% (February 19<sup>th</sup>, 2007 issue). This is down from a 5% change in

2006 and 6.9% in 2005. So the trend appears to slowing down and leveling off per ENR. However, it should be noted that when broken down into components, common labor, skilled labor and most materials exceed a 3% increase. Also, ENR indexes are commodity based factors. Although they are representative of the construction industry, they may not fully represent current market conditions or bidding climates. They do not take into account surcharges or certain demand factors that may be impacting the market. Refer to Attachment "A" for selected sections from ENR's 4<sup>th</sup> Quarter Report (December 18<sup>th</sup>, 2006) which presents that publication's forecast for 2007.

The chief economist for the Associated General Contractors of America, in a February 2007, feels that for 2007 materials will increase by +4-6% (Dec-Dec) and Labor Costs +5% (Dec-Dec).

Starting in January 2004, the construction industry experienced market impacts that are still being felt today. From January 2004 to February 2007, the ENR CCI index has increased an average of 5.3% and the material index has increased 8.63% for the same period.

There are other resources that can be used and referenced. But, the final determination comes down to a judgmental assessment as to the most reasonable rate to use. This assessment becomes more difficult as the forecast goes out more than one or two years due to the uncertainty of market conditions.

A rate needs to be settled on, so using the limited information presented above, the rate to use, for the purposes of this project, is 7% per year, at this time. Note that this rate needs to be compounded per year past the 1<sup>st</sup> year.

### **Mechanics of Escalation Rate Application**

Because the construction component is usually the largest value of the overall project costs, this will be used as focal point of escalation. Accepting this premise, the methodology that is adopted is to escalate the total project costs to the mid-point of construction. The duration begins with "today's date", though design, to the anticipated mid-point of the construction activities. Attachment "B" is an example of a tool that can be used for this purpose.

### **Project Time-Table and Construction Schedule**

Determining when a project will be executed, in preliminary design stages, can be difficult. For purposes of this effort, the time table provided by the client, as the anticipated program schedule, will be used as the basis for the duration of work.

## **Historical Costs**

The use of historical costs for a current estimate is an appropriate and logical approach to producing and estimate, especially in the early design phases of the project. But, it's important that the use of these historical costs be documented in the "Basis of Estimate" for purposes of adding credibility to the estimate.

There are some considerations that need to be addressed when using historical costs:

### **Actual vs Estimated**

It's important to note whether the historical cost comes from actual recorded information or if it's an estimated value. The preferred approach is to use actual data, where possible and feasible.

### **Adjustment to Current Dollars**

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As outlined in TM 01, the ENR CCI 20-cities index will be used to adjust historical information to current values (re: TM 01-Project Cost Estimating Guidelines; section "Adjustment Factors and Cost Indexing - Definition"; "Cost Index-ENR Basis"; also, in that TM, Appendix "F"). Refer to that section for specifics. If another approach is used, since it's felt that it may be more appropriate, this is to be stated in the "Basis of Estimate".

**Historical Data - Outdated Information**

Data that is more than 3 years old should not be used, unless it can be documented, and justified to support the usage. As historical data of an item or unit cost under consideration gets older and older, it may not necessarily follow the ENR cost index curve.

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**ATTACHMENT "A" - ENR 4<sup>th</sup> Quarterly Report 2006 - Forecast Information****Fourth Quarterly Cost Report**

December 18, 2006

ENR's Q4 2006 cost report is a special, international package of news, analysis and data with many charts and statistics unavailable from any other source (including a forecast of both domestic and international cost increases). The cost report contains stories about how inflation has started to trend downward, the affect of the across-the-globe construction boom and how the competition for qualified employees drives up designer salaries. In this cost report there also are tables showing ENR's 2007 Cost Forecast, Material Price Inflation Through 2007, U.S. Cement Consumption Forecast, Construction Materials Price Movement in 2006, Steel Prices Will Fall in 2007, Builders' Construction Cost Indexes, International Price Trends, International Building Cost Forecast 2007, Building Inflation in Europe, Middle East/Africa/Asia and North and South America, World Labor Rates, International commercial and Industrial Building Costs, International Residential and Retail Building Costs, and Industrial building Purchasing Parities/Index, International Material Prices and Design Firm Managers' Salaries and Bonuses.

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Summary Cost Report 4Q

# Materials Price Escalation Eases

The extreme materials price escalation that hounded the construction industry for the last three years may have run its course. ENR's annual forecast calls for overall construction inflation to slip back below 3% as most materials prices ease in 2007, with the biggest cuts coming for steel and wood products. But the downward adjustment will be modest compared to the strong increase recorded between 2004 and 2006. Despite the slowdown in housing, overall market activity will remain strong, keeping pressure on labor costs, which will become the new driver for industry inflation. Strong global construction markets also will help prop up higher costs in most regions of the world, especially in the energy and industrial process sectors. ■

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PHOTO BY GUY LAWRENCE FOR ENR

enr.com December 18, 2006 ■ ENR ■ 23

**4Q Cost Report Forecast**  
By Tim Grogan

# Inflation Shifts Gears in 2007

Construction's inflationary cycle turned the corner during 2006 and will continue heading downhill through 2007 and 2008, according to industry forecasts. ENR predicts that annual inflation measured by its cost indexes will decline as prices for most con-

struction materials start to subside, after absorbing wave after wave of double-digit increases since 2004. But as the inflationary cycle moves into a new phase, it is shifting gears. Estimators say inflation is still sneaking into their bids as the large volume of work in the nonresidential building and civil works markets reduces competition and aggravates labor shortages.

Weaker material prices in 2007 will have the biggest impact on ENR's Building Cost Index, which is forecasted to increase just 0.7% next year. Inflation measured by this index already had been

easing, slipping to 2.6% this year after increasing 5.0% in 2005 and 9.7% in 2004.

ENR's Construction Cost index, which is more heavily weighted toward labor costs, is predicted to increase 2.7% next year, after increasing 3.2% this year, 4.6% in 2005 and 7.8% in 2004.

The most critical element in forecasting ENR's indexes is labor costs, which account for 79% of the CCI and 63% of the BCI. A year ago, ENR's forecast called for a 4.4% increase in the indexes labor component. The actual increase was 3.6% for the skilled labor component of

the BCI and 3.8% for the laborer component of the CCI.

ENR is forecasting that the labor component of its indexes will hold close to the increases already negotiated for next year. Multiyear collective bargaining agreements reported by the Construction Labor Research Council, Washington, D.C., call for another 4.7% increase in 2007. ENR expects the labor component of the BCI to match this increase. The CCI's labor component is forecasted to increase 5.0% next year as ENR's wages for laborers catch up to the 5.0% national average increase reported this year by CLRC.

"The driver for inflation is different from what it was two years ago," says Karl Almstead, vice president for the Turner Construction Co., New York City. "The uncertainty that we saw in the materials market is being carried over into labor. The availability of skilled labor is causing

### ENR's 2007 Cost Forecast

	2006	2007	% CHG.	
			'05-06	'06-07
<b>BUILDING COST INDEX</b>	4440.50	4472.85	+2.6	+0.7
<b>SKILLED LABOR INDEX</b>	7458.80	7809.36	+3.6	+4.7
Wage, \$/hr.	41.40	43.35	+3.6	+4.7
<b>CONSTRUCTION COST INDEX</b>	7887.62	8100.58	+3.2	+2.7
<b>COMMON LABOR INDEX</b>	16520.53	17346.56	+3.8	+5.0
Wage, \$/hr.	31.39	32.95	+3.8	+5.0
<b>MATERIALS COST INDEX</b>	2596.48	2432.90	+0.8	-6.3
<b>PORTLAND CEMENT, ton</b>	95.06	98.20	+6.0	+3.3
<b>LUMBER, 2X4, mbf</b>	466.76	449.96	-11.1	-3.6
<b>STRUCTURAL STEEL, cwt</b>	39.79	36.33	+9.6	-8.7

ENR'S COST INDEXES FORECASTED TO DECEMBER 2007. PERCENT CHANGES ARE DEC. VS. DEC.

### Materials Price Inflation Through 2007

	2004	2005	2006	2007
<b>ASPHALT PAVING</b>	1.6	8.3	27.7	9.4
<b>CEMENT</b>	3.2	12.7	12.7	1.2
<b>CONCRETE REINFORCING BARS</b>	55.5	1.2	6.4	-2.3
<b>CONST. MACHINERY AND EQUIP.</b>	3.1	4.6	4.5	4.2
<b>FABRICATED PIPE AND FITTINGS</b>	20.2	9.9	6.4	3.4
<b>FABRICATED STRUCTURAL METAL</b>	12.3	7.2	4.2	0.9
<b>FABRICATED STRUCTURAL SHEET</b>	16.2	7.7	5.1	1.5
<b>GYPSUM PRODUCTS</b>	15.1	14.3	18.8	-8.9
<b>LUMBER, SOFTWOOD</b>	22.8	-2.9	-7.0	-9.3
<b>PLYWOOD</b>	18.9	-5.9	-8.0	-6.4
<b>SAND GRAVEL AND CRUSHED STONE</b>	3.5	6.8	9.3	5.7
<b>SHEET METAL WORK</b>	10.3	3.9	3.4	-1.4
<b>LIGHT STRUCTURALS, SHAPES</b>	65.3	2.0	14.8	-11.4

SOURCE: GLOBAL INSIGHT INC., NOTE: ESCALATION RATES ARE ANNUAL AVERAGES



productivity issues, which increases the cost of labor beyond that measured in labor settlements," he says.

**Wave Subsiding**

This year's double-digit price hikes for copper, steel and asphalt may have been inflation's last hurrah on the materials front. "The commodity cycle [that has been driving inflation] is coming to an end," says Michele Halickman, the construction materials analyst for the Washington, D.C.-based forecasting firm Global Insight Inc.

Some of the pricing turnarounds predicted by Global Insight are dramatic. Prices for light structural steel will fall 11.4% next year after climbing nearly 15% in 2006. Likewise, wallboard prices will fall 8.9%, following this year's 18.8% increase. Prices for paving asphalt are expected to increase just 9.4%, after jumping 27.7% in 2006, Halickman says.

The slowdown in materials price escalation will have a major drag on ENR's cost indexes in 2007. Weaker steel, cement and lumber prices are expected to pull down the materials component of the indexes by 6.3% by next December.

The biggest reversal will be for steel prices, which account for 22% of the BCI. ENR's forecast calls for the steel component of the indexes to decline 8.7% next year, following increases of 9.6% in 2006, 12.6% in 2005 and 31.3% in 2004.

Steel imports in 2006 were almost as high as they were during the Asian finan-

**U.S. Cement Consumption Forecast**

	2006	2007	2008	% CHANGE		
				05-06	06-07	07-08
<b>TOTAL CEMENT CONSUMPTION</b>	127,536	127,889	131,345	+0.6	+0.3	+2.7
<b>PORTLAND CEMENT</b>	122,056	122,457	125,949	+0.6	+0.3	+2.9
<b>MASONRY CEMENT</b>	5,172	5,489	5,480	-0.2	-0.9	-0.7
Portland % Share of Total	95.7	95.8	95.9	-	-	-
<b>CEMENT AND CLINKER IMPORTS</b>	33,443	38,587	35,567	+14.2	+0.4	-7.8
Import % Share	31.5	31.5	28.2	-	-	-

SOURCE: PORTLAND CEMENT ASSOCIATION

**Construction Materials Price Movement in 2006**

	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
<b>AGGREGATES</b>	Monthly % chg. -0.1	+0.2	+0.2	+0.1	-0.1	+0.3	+0.3
	Annual % chg. +5.4	+3.7	+3.8	+3.6	+3.2	+3.6	+3.8
<b>ALUMINUM SHEET</b>	Monthly % chg. +1.2	+6.0	+0.5	-3.0	-0.6	-0.4	+0.3
	Annual % chg. +9.7	16.4	+19.6	+16.7	+15.9	+15.2	+14.8
<b>ASPHALT PAVING MIXTURE</b>	Monthly % chg. +4.0	+4.0	+3.3	+4.3	+1.4	-0.2	+0.3
	Annual % chg. +24.4	+27.3	+31.6	+37.1	+38.0	+33.6	+30.2
<b>BRICKS</b>	Monthly % chg. +0.9	-0.5	+0.3	+0.2	-0.2	+0.2	-0.2
	Annual % chg. +8.0	+7.2	+7.2	+7.2	+6.9	+7.5	+6.1
<b>CEMENT</b>	Monthly % chg. +0.7	+0.5	+0.1	+0.4	+0.3	+0.3	+0.7
	Annual % chg. +14.5	+14.8	+14.7	+10.9	+11.1	+10.8	+11.5
<b>COPPER, PIPE AND TUBE</b>	Monthly % chg. +18.0	+13.4	+32.0	-15.2	-7.3	+11.3	-6.7
	Annual % chg. +71.2	+88.3	+137.2	+99.8	+80.3	+88.0	+65.2
<b>DIESEL FUEL</b>	Monthly % chg. +11.6	+4.0	+3.1	-3.0	+6.1	-20.8	-1.9
	Annual % chg. +31.4	+40.3	+31.9	+26.1	+26.6	-5.3	-25.2
<b>DUCTILE IRON</b>	Monthly % chg. 0.0	-0.5	0.0	+3.1	-0.4	+0.3	-0.1
	Annual % chg. +6.3	+5.8	+5.8	+9.1	+8.6	+8.9	+8.7
<b>FABRICATED STEEL, BLDG.</b>	Monthly % chg. +0.2	+0.4	+0.6	+1.5	+0.8	-0.5	+0.5
	Annual % chg. +4.0	+4.3	+5.1	+7.2	+8.0	+6.5	+5.1
<b>GLASS, FLAT</b>	Monthly % chg. -0.6	+1.7	-0.6	+1.3	-1.3	-0.2	+0.2
	Annual % chg. -0.9	+1.7	+1.1	+2.2	+0.9	+0.9	+0.6
<b>GYPSUM PRODUCTS</b>	Monthly % chg. +0.5	+3.1	-0.8	+0.9	+2.5	-0.7	-1.6
	Annual % chg. +23.2	+25.3	+22.1	+21.5	+19.8	+17.4	+14.3
<b>LUMBER, SOFTWOOD</b>	Monthly % chg. -1.3	+1.6	-6.1	-2.8	-5.6	+0.7	-6.8
	Annual % chg. -4.3	+2.8	-7.2	-7.0	-9.4	-11.3	-16.0
<b>PAINT</b>	Monthly % chg. +0.1	+0.4	0.0	+0.2	+0.4	-0.1	+0.3
	Annual % chg. +8.4	+7.7	+7.6	+7.6	+7.8	+7.8	+7.9
<b>PIPE &amp; PIPE FITTING</b>	Monthly % chg. -0.8	+1.0	+0.9	+1.9	+0.8	+2.1	-0.3
	Annual % chg. +2.9	+3.5	+4.5	+6.8	+8.0	+10.3	+9.5
<b>PLYWOOD</b>	Monthly % chg. +1.2	-3.3	-1.7	+0.1	-4.3	-0.2	-2.1
	Annual % chg. -0.8	+1.3	-7.0	-4.7	-6.1	-17.2	-23.3
<b>PVC PRODUCTS</b>	Monthly % chg. -0.2	-0.1	-0.6	+1.5	+0.2	-0.1	-0.2
	Annual % chg. +18.0	+17.6	+18.2	+19.6	+20.1	+18.8	+9.8
<b>READY-MIX CONCRETE</b>	Monthly % chg. +0.7	+0.1	+0.3	+1.8	0.0	-0.3	0.0
	Annual % chg. +13.0	+12.9	+12.9	+12.4	+11.9	+10.5	+10.5
<b>SHEET METAL</b>	Monthly % chg. +0.4	+0.4	+1.7	+0.6	+1.0	-0.1	+0.2
	Annual % chg. +1.3	+2.1	+4.2	+5.0	+6.0	+5.8	+5.7
<b>WIRE AND CABLE</b>	Monthly % chg. +6.0	+14.0	+5.5	-4.8	+3.3	+0.3	+0.2
	Annual % chg. +26.8	+44.4	+51.1	+40.3	+44.6	+43.0	+39.9

SOURCE: BUREAU OF LABOR STATISTICS, NA= NOT AVAILABLE

**4Q Cost Report Forecast**

cial crisis of 1998 but most of the import activity has been for sheet, says John Anton, Global Insight's steel analyst. Imports for structural failed to materialize due to strong demand in the world markets for those products, he adds. "That is why structural prices were so darn high this year," says Anton.

Structural prices ended the fourth quarter of this year at \$643 per ton, a 12.1% increase over the fourth quarter of last year. Anton believes that will change in 2007 and predicts imports will finally start to respond to high domestic prices, helping to push the average price for structural steel down 18% by the end of next year.

Lumber is the next-largest materials component of ENR's indexes, accounting for 13% of the BCI. The slowdown in housing starts already has cut into lumber prices this year and those declines are expected to continue through most of 2007, says Paul Jannke, vice president of wood products for the forecasting firm Resource Information Systems Inc., Bedford, Mass.

RISI predicts that by next December, the average price for 2x4 western spruce will decline another 8.3% to \$244 per thousand board ft, following this year's decline of 20.8%. Prices are being squeezed by a combination of falling demand and excess capacity, says Jannke. But he says mills are losing money at current prices and he expects closures will help drive up prices by the end of 2007. Jannke says RISI is tracking the same trends for OSB and plywood prices.

Portland cement is the third materials component of ENR's indexes and cement prices have been increasing at a 12.4% annual rate for the past two years, says Halickman. A surge in imports from China and a new trade deal with Mexico have eliminated the chronic cement shortages of a few years ago. This, coupled with weaker demand from the housing market, will stall further price hikes. Global Insight predicts cement prices will start to fall during the second half of next year, ending 2007 with a 1.2% gain. ENR is forecasting a 3.3% increase in its price. ■

**Builders' Construction Cost Indexes**

NAME, AREA AND TYPE	OCT. 2005	JAN. 2006	APRIL 2006	JULY 2006	OCT. 2006	PERCENT CHANGE QUARTER	YEAR
<b>GENERAL-PURPOSE COST INDEXES</b>							
ENR 20-city: Construction Cost <sup>1</sup>	704.04	713.14	716.41	718.82	733.83	+2.1	+4.2
ENR 20-city: Building Cost <sup>1</sup>	631.35	641.63	641.73	644.78	655.91	+1.7	+3.9
BuRec: General Buildings <sup>2</sup>	277.00	279.00	283.00	285.00	289.00	+1.4	+4.3
Factory Mutual: Industrial <sup>3</sup>	NA	236.00	NA	245.00	NA	+1.9	+5.6
LSI: Material/Labor <sup>4</sup>	718.04	NA	736.00	752.14	NA	+2.1	+6.7
Means: Construction Cost <sup>4</sup>	153.60	156.20	157.90	162.00	164.70	+1.7	+7.2
SmithGroup <sup>5</sup>	142.95	143.67	145.81	148.39	150.61	+1.5	+5.4
<b>SELLING PRICE INDEXES—BUILDING</b>							
LSI: Subcontractor <sup>1</sup>	800.36	818.47	830.99	852.15	NA	+2.6	+9.0
Turner: General Building <sup>1</sup>	746.00	766.00	787.00	801.00	818.00	+2.1	+9.7
Rider Hunt Levett & Bailey <sup>7</sup>	119.83	122.83	126.06	129.57	132.89	+2.6	+10.9
<b>VALUATION INDEXES</b>							
Boeckh: Commercial/Manufacturing <sup>1</sup>	656.56	679.28	692.80	690.12	NA	NA	NA
Marshall & Swift: Industrial <sup>6</sup>	156.90	116.90	163.10	165.40	171.00	+3.4	+9.0
M&S Eastern Region	159.00	163.00	165.30	167.70	173.90	+3.7	+9.4
M&S Central Region	159.50	163.50	165.50	167.70	173.10	+3.2	+8.5
M&S Western Region	152.00	156.00	158.30	160.60	166.00	+3.4	+9.2
<b>COMMERCE RESIDENTIAL BUILDING COST INDEXES</b>							
New Single-Family <sup>6</sup>	151.30	152.60	153.90	153.60	157.00	+2.2	+3.8
New Warehouse <sup>8</sup>	107.50	109.10	110.80	113.10	116.40	+2.9	+8.3

<sup>1</sup>BASE: 1967=100. <sup>2</sup>BASE: 1977=100. <sup>3</sup>BASE: 1980=100. <sup>4</sup>BASE: 1993=100. <sup>5</sup>BASE: 1992=100. <sup>6</sup>BASE: 1992=100. <sup>7</sup>BASE: APRIL 2001=100. <sup>8</sup>P=PRELIMINARY OCTOBER REPRESENTS SEPTEMBER DATA. THE AUSTIN CO. INDUSTRIAL BUILDING COST INDEX HAS BEEN DISCONTINUED.

**International Price Trends**

	1Q'04	3Q'04	1Q'05	3Q'05	1Q'06	3Q'06
<b>EUROPE</b>						
<b>BELGIUM</b>	109.0	112.2	112.7	113.8	115.8	117.0
<b>CZECH REPUBLIC, Prague</b>	109.9	110.5	112.7	114.8	115.5	116.6
<b>FINLAND, Helsinki<sup>1</sup></b>	104.7	108.4	108.4	111.1	111.8	112.9
<b>FRANCE, Paris<sup>1</sup></b>	112.7	114.4	119.2	121.6	124.5	126.4
<b>GERMANY, Berlin<sup>1</sup></b>	100.7	101.0	102.3	103.3	105.7	106.2
<b>GREAT BRITAIN, London</b>	121.6	125.3	129.1	132.9	131.6	135.6
<b>GREECE, Athens</b>	127.1	132.1	136.3	141.1	147.1	147.1
<b>IRELAND, Dublin<sup>1</sup></b>	115.4	116.0	118.2	120.0	122.1	123.3
<b>ITALY, Rome<sup>1</sup></b>	112.7	117.7	118.4	119.9	122.2	123.7
<b>NORWAY, Oslo</b>	111.2	114.5	114.4	116.1	120.3	123.3
<b>POLAND, Warsaw</b>	116.1	117.8	120.3	123.2	125.0	127.1
<b>PORTUGAL, Lisbon<sup>1</sup></b>	111.6	113.2	115.5	116.6	118.9	121.1
<b>RUSSIA, Moscow<sup>2</sup></b>	109.9	123.6	114.2	115.0	120.4	124.6
<b>SPAIN, Madrid<sup>1</sup></b>	114.6	116.3	118.1	119.5	122.1	125.7
<b>SWEDEN, Stockholm</b>	114.0	117.9	117.9	121.5	120.3	120.9
<b>NORTH AMERICA</b>						
<b>BRAZIL, Sao Paulo</b>	146.7	154.7	157.7	165.5	167.8	172.4
<b>CANADA, Toronto</b>	118.1	122.8	125.0	128.1	132.7	137.4
<b>MEXICO, Mexico City</b>	124.7	130.9	134.1	138.8	139.8	155.2
<b>UNITED STATES, Chicago</b>	110.7	114.1	118.8	122.4	126.7	134.3
<b>PACIFIC</b>						
<b>AUSTRALIA, Sydney</b>	119.0	121.4	127.1	129.9	133.7	137.1
<b>CHINA, Shanghai</b>	102.6	105.7	107.7	109.9	109.9	111.5
<b>JAPAN, Tokyo</b>	97.4	102.2	101.5	104.0	103.5	106.3
<b>MALAYSIA, Kuala Lumpur</b>	107.9	110.6	115.8	119.9	119.9	122.9
<b>NEW ZEALAND, Auckland</b>	120.7	125.5	128.1	133.8	135.1	139.2
<b>SINGAPORE, Singapore</b>	112.8	115.1	114.5	114.5	116.6	116.6
<b>THAILAND, Bangkok</b>	116.1	119.3	124.2	126.7	128.6	132.4

SOURCE: HANSCOMB FAITHFUL & GOULD. INFLATION FORECAST IS %06. 1 EURO TO U.S. DOLLAR RATES ARE FOR THIRD QUARTER.

ATTACHMENT "B" - Escalation Tool

Project Name:  
 Facility:  
 Design Stage:  
 Date:

Project Number:  
 Prepared By:



**Escalation Adjustment - Calculation Worksheet**

Use ENR 20-City Average Index

6.00% = Annual Escalation Rate to Apply (2)

**ESCALATION ADJUSTMENT:**

Target NTP for Design:	1-Mar-07	⇐ If design is in progress or completed, use Today's date and adjust input cells as needed
Design Period:	28-Aug-07	6 Mo Duration (or remaining design time duration)
Bid and Award:	26-Dec-07	4 Mo Duration
NTP Date:	2-Jan-08	7 Da Duration for NTP (7 days as default)
Construction Duration (calendar days):	300 Days	10 Mo Duration
Completion Date:	28-Oct-08	110.77% Factor
Mid-Point Construction:	31-May-08	
Current Est Date:	29-Aug-06	
No. of Days to Mid-Point:	641	
No. of Years to Mid-Point:	1.7562	

**10.77% Esc Rate**  
 Escalation to Apply to Opinion of Cost

**NOTES:**

- Green cells are input cells. Yellow cells are default values. 30 calendar days is used to equate to 1 month.
- Escalation percentage determined per CH2M HILL EPC Committee and updated as required.
- Escalation percentage does not include any other Market Adjustment Factors that might apply.

The Escalation Rate and Calculations are for purposes of allowing for perceived increases in labor, material and equipment for the period indicated. This is only a projection and an approximation, and does not represent what the actual adjustment will ultimately be since that will vary from what is calculated above.